

## REMARKS

This Response is submitted in reply to the Office Action dated August 31, 2010. Claims 7, 9 and 11 are pending in the present application. Claims 1 to 6, 8, 10 and 12 stand previously cancelled. Claims 7 and 9 are hereby amended for clarity. No new matter has been added by such amendments. Claims 7 and 9 are in independent form. A Petition for a One Month Extension of Time to reply to the Office Action is submitted with this Response. Please charge Deposit Account No. 02-1818 for all payments due in connection with this Response.

The Office Action rejected independent Claim 7 and independent Claim 9 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0093278 to Malah ("Malah") in view of U.S. Patent No. 6,574,593 to Gao et al. ("Gao") and U.S. Patent No. 6,691,092 to Udaya Bhaskar et al. ("Bhaskar"). The Office Action rejected Claim 11 under U.S.C. § 103(a) as being unpatentable over Malah in view of Gao, Bhaskar and U.S. Patent No. 6,498,811 to Van Der Vleuten ("Van Der Vleuten"). Applicant respectfully disagrees with these rejections for at least the following reasons.

### 1. **Picking and Choosing Different Elements from Malah, Gao and Bhaskar**

In the Office Action, the Examiner selected Malah as the base reference.

Malah discloses a method of bandwidth extension for narrow-band speech. The Abstract of Malah discloses:

[a] system and method are disclosed for extending the bandwidth of a narrowband signal such as a speech signal. The method applies a parametric approach to bandwidth extension but does not require training. The parametric representation relates to a discrete acoustic tube model (DATM). The method comprises computing narrowband linear predictive coefficients (LPCs) from a received narrowband speech signal, computing narrowband partial correlation coefficients (parcors) using recursion, computing  $M_{nb}$  area coefficients from the partial correlation coefficient, and extracting  $M_{wb}$  area coefficients using interpolation. Wideband parcors are computed from the  $M_{wb}$  area coefficients and wideband LPCs are computed from the wideband parcors. The method further comprises synthesizing a wideband signal using the wideband LPCs and a wideband excitation signal, highpass filtering the synthesized wideband signal to produce a highband signal, and combining the highband signal with the original narrowband signal to generate a wideband signal. In a preferred variation of the invention, the  $M_{nb}$  area coefficients are converted to log-area coefficients for the purpose of extracting, through shifted-interpolation,  $M_{wb}$  log-area coefficients. The  $M_{wb}$  log-

area coefficients are then converted to  $M_{wb}$  area coefficients before generating the wideband paracors.

Recognizing the deficiencies of Malah, the Office Action acknowledged that Malah:

does not specifically teach a memory unit, communicatively coupled to said bandwidth expansion device, wherein said memory device stores a reference table that includes at least one parameter value used for the bandwidth expansion for at least two net bit rates of the narrowband speech signal; the reference table includes data relating to an amount of energy in a synthesized frequency band and of a spectral structure of the synthesized frequency band; the spectral structure of the synthesized frequency band takes account of a probability of occurrence of artifacts at specific frequencies in the narrowband speech.

The Office Action turned to Gao for certain of these elements.

Gao discloses codebook tables for encoding and decoding. The Abstract of Gao discloses:

[a] speech compression system capable of encoding a speech signal into a bitstream for subsequent decoding to generate synthesized speech is disclosed. The speech compression system optimizes the bandwidth consumed by the bitstream by balancing the desired average bit rate with the perceptual quality of the reconstructed speech. The speech compression system comprises a full-rate codec, a half-rate codec, a quarter-rate codec and an eighth-rate codec. The codecs are selectively activated based on a rate selection. In addition, the full and half-rate codecs are selectively activated based on a type classification. Each codec is selectively activated to encode and decode the speech signals at different bit rates emphasizing different aspects of the speech signal to enhance overall quality of the synthesized speech.

The Office Action concluded that:

[i]t would have been obvious to it would have been obvious to one of ordinary skill in the art at the time the invention was made to use inverse mapping of the components of the bitstream as taught by Gao et al., in view of Malah, because that would provide high quality decompressed speech (col.4, lines 23 - 25).

Recognizing the deficiencies of the combination of and Malah and Gao, the Office Action acknowledged that the combination of Malah and Gao:

do not specifically teach the that the spectral structure of the synthesized frequency band takes account of a probability of occurrence of artifacts at specific frequencies in the narrowband speech.

The Office Action turned to Bhaskar for this element.

Bhaskar discloses voicing measure as an estimate of signal periodicity for a frequency domain interpolative speech codec system. The Abstract of Bhaskar discloses:

[a] system determines a voicing measure as a measure of the degree of signal periodicity and uses the determined voicing measure to quantize the spectral magnitude of the slowly evolving waveform (SEW) and the modeling of the SEW and rapidly evolving waveform (REW) phase spectra.

The Office Action concluded that:

[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to specify the provability [sic] of artifacts as taught by Udaya Bhaskar et al., in Gao et al., in view of Malah, because that would help determine the degree of bandwidth broadening necessary for the interpolated LP synthesis filter coefficients (co1.12, lines 35 -50).

In summation, the Office Action rejected Claim 7 by apparently reasoning that it would have been obvious to one of ordinary skill in the art at the time of the invention to:

- (1) start with Malah as the base reference; and then
- (2) modify Malah with Gao to add the feature of a reference table stored in memory that includes at least one parameter value for bandwidth expansion for at least two net bit rates of the narrowband speech signal; and then
- (3) ignore that the reference table of Claim 7 includes data relating to an amount of energy in a synthesized frequency band and of a spectral structure of the synthesized frequency band; and then
- (4) modify the resulting combination of Malah and Gao with Bhaskar to add the feature of specifying probability of artifacts.

Applicant disagrees with this combination.

The Office Action has clearly improperly ignored the warnings of KSR International Company v. Teleflex Inc., et al., (550 U.S. 398, 2007) that a “factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” In this case, the Office Action clearly improperly worked backwards from the claimed invention as a mosaic to piece together elements from different references to form the claimed invention. Specifically, only with the benefit of improper hindsight reconstruction

was the Examiner able to pick and choose the numerous different elements from Malah, Gao and Bhaskar to recreate the claimed invention to form the basis of these rejections.

The law is clear that obviousness cannot be based on the hindsight combination of components selectively culled from prior art to fit the parameters of the claimed invention. Accordingly, it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify Malah with different portions of Gao and Bhaskar to form the communication device of independent Claim 7.

For this reason alone, the rejection of Claim 7 is improper and should be reversed.

Independent Claim 9 includes certain similar elements to independent Claim 7. For reasons similar to those discussed above with respect to independent Claim 7, the rejection of independent Claim 9 is improper and should be reversed.

## **2. The Office Action Failed to Provide an Explicit, Cogent Reason Why it would be Obvious to Modify Malah with Gao**

To establish a *prima facie* case of obviousness, the Office Action has an obligation to construe the scope of the prior art, identify the differences between the claims and the prior art, and determine the level of skill in the pertinent art at the time of the invention. The Office Action must then provide: (1) an explicit, cogent reason based on the foregoing why it would be obvious to modify the prior art to arrive at the claimed invention; (2) a reasonable expectation of success; and (3) a teaching or suggestion of all claimed features. See MPEP §§ 706.02(j) and 2143.

As described above, after acknowledging that Malah:

does not specifically teach a memory unit, communicatively coupled to said bandwidth expansion device, wherein said memory device stores a reference table that includes at least one parameter value used for the bandwidth expansion for at least two net bit rates of the narrowband speech signal; the reference table includes data relating to an amount of energy in a synthesized frequency band and of a spectral structure of the synthesized frequency band; the spectral structure of the synthesized frequency band takes account of a probability of occurrence of artifacts at specific frequencies in the narrowband speech.

the Office Action concluded that:

[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to use inverse mapping of the components of the bitstream as taught by Gao et al., in view of Malah, because that would provide high quality decompressed speech (col.4, lines 23 - 25).

The Office Action's reasoning is not an explicit, cogent reason why it would be obvious to modify Malah with Gao to arrive at the claimed invention. Rather, such a improper generic statement related to providing high quality decompressed speech provides no basis or reason for why one of ordinary skill in the art would or would not combine Malah with Gao. This generic reason of combining references to provide "high quality decompressed speech" results in nearly every reference in the communication industry being combinable with nearly every other reference in the communication industry. This is clearly not the case.

As reiterated by the United States Supreme Court in KSR International Company v. Teleflex Inc., et al.:

rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

In this case, the Office Action's reasoning consists of improper conclusory statements regarding high quality decompressed speech. Such reasoning lacks the rational underpinning required to support any legal conclusion of obviousness. Accordingly, adding Malah with Gao under the guise of providing high quality decompressed speech is improper.

For this reason alone, the rejection of Claims 7 is improper and should be reversed.

Independent Claim 9 includes certain similar elements to independent Claim 7. For reasons similar to those discussed above with respect to independent Claim 7, the rejection of independent Claim 9 is improper and should be reversed.

**3. The Combination of Malah, Gao and Bhaskar does Not Disclose a Reference Table that Includes at Least One Parameter Value Used for the Bandwidth Expansion for at Least Two Net Bit Rates of the Narrowband Speech Signal**

The communication device resulting from a combination of Malah, Gao and Bhaskar would include a bandwidth expansion during an LPC analysis. For example, column 31, line 56 to column 32, line 2 of Gao discloses:

[d]ifferent rent windows may be used for each LPC analysis within a frame to calculate the linear prediction coefficients. The LPC analyses in one embodiment are performed using the autocorrelation method to calculate autocorrelation coefficients. The autocorrelation coefficients may be calculated from a plurality of data samples within each window. During the LPC analysis, bandwidth expansion of 60 Hz and a white noise correction factor of 1.0001 may be applied to the autocorrelation coefficients. The bandwidth expansion provides additional robustness against signal and round-off errors during subsequent encoding. The white noise correction factor effectively adds a noise floor of -40 dB to reduce the spectral dynamic range and further mitigate errors during subsequent encoding.

The Office Action relied on Gao for the reference table including at least one parameter value used for bandwidth expansion for at least two net bit rates of the narrowband speech signal. It appears that the Office Action would interpret Gao's bandwidth expansion as the bandwidth expansion of Claim 7. For example, page 4 of the Office Action stated that Gao teaches, with emphasis in original:

bandwidth expansion provides additional robustness against signal and round-off errors during subsequent encoding. According to rate selection, the bit-stream may be decoded to generate the post-processed synthesized speech. The decoders 90, and 92 perform inverse mapping of the components of the **bit-stream to algorithm parameters**. The inverse mapping may be followed by a type classification dependent synthesis within **the full and half-rate** codecs 22, and 24. Adaptive gain control module brings the energy level of the synthesized speech...parameters...may be adapted according to the rate selection and the long-term spectral characteristic determined by the characterization module (col.31, lines 64 - 67; col.56, lines 20 - 26; col.58, lines 13 - 17, and 43 - 45; performing **inverse mapping to algorithm parameters** implies a reference table stored in a memory that includes at least one parameter value for the bandwidth expansion for at least two net bit rates of the narrowband speech signal, **since the inverse mapping of parameters is done based on a selected rate**).

Applicant submits that Gao's bandwidth expansion is not for at least two net bit rates of narrowband speech signal. Rather, as discussed above, Gao's bandwidth expansion may be applied to autocorrelation coefficients to provide additional robustness against signal and round-off errors during subsequent encoding. That is, unlike the communication device of Claim 7, the communication device resulting from a combination of Malah, Gao and Bhaskar does not disclose a memory unit, communicatively coupled to said bandwidth expansion device, wherein said memory unit stores a reference table that includes at least one parameter value used for the

bandwidth expansion for the at least two net bit rates of the narrowband speech signal, wherein the reference table takes account, as parameters, of an amount of energy in a synthesized frequency band and of a spectral structure of the synthesized frequency band, and wherein the spectral structure of the synthesized frequency band takes account of a probability of occurrences of artifacts at specific frequencies in the narrowband speech signal.

For at least these reasons, it is respectfully submitted that independent Claim 7 is patentably distinguished over Malah, Gao and Bhaskar and in condition for allowance. Independent Claim 9 includes certain similar elements to independent Claim 7. For reasons similar to those discussed above with respect to independent Claim 7, independent Claim 9 is patentably distinguished over Malah, Gao and Bhaskar and in condition for allowance.

**4. Regarding Independent Claim 9, the Office Action Fails to Meet the Requirements set forth in MPEP §706.02(j).**

The MPEP guidelines for the contents of a 35 U.S.C. §103 rejection prohibit an Examiner from asserting that a prior art reference is considered to show the claimed invention without indicating which relevant teachings are relied upon and where in the prior art reference the relevant teachings are found.

Specifically, MPEP §706.02(j) states that:

[a]fter indicating that the rejection is under 35 U.S.C. 103, the examiner should set forth in the Office action: (A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate. (emphasis added)

Applicant submits that the present Office Action does not set forth where certain of the elements of the claimed subject matter is disclosed in Malah, Gao and Bhaskar. For example, the method of independent Claim 9 includes, among other elements, “expanding the bandwidth by means of a bandwidth expansion device on the basis of the parameters determined for the detected net bit rate in step b).”

The Office Action fails to address this element. Accordingly, Applicant respectfully requests that, if the Examiner does not find independent Claim 9 distinguished over Malah, Gao and Bhaskar, the Examiner at least indicate, in the next Office Action, which (if any) of the element(s) of Malah, Gao and Bhaskar are interpreted as “expanding the bandwidth by means of

a bandwidth expansion device on the basis of the parameters determined for the detected net bit rate in step b).”

Moreover, Applicant respectfully submits, “[i]t is important for an examiner to properly communicate the basis for a rejection so that the issues can be identified early and the applicant can be given fair opportunity to reply” (MPEP §706.02(j)). In this case, as indicated above, Applicant submits that both the Office Action fails to properly communicate the bases for a rejection pursuant to the MPEP guidelines for the contents of a 35 U.S.C. §103 rejection. Moreover, Applicant respectfully submits that it is not the Applicant’s duty to decipher how an Office Action may or may not be interpreting one or more references cited in a rejection without the Office Action having first properly communicated which elements of the references are relied upon and how those elements anticipate and/or render obvious the claims of the instant application.

## **5. Amendments**

Despite the foregoing traversal, Applicant has amended independent Claim 7 in view of the Advisory Action of May 13, 2010. In the Advisory Action, the Examiner stated:

Claim 7 requires further consideration and/or search since it recites now the allowable subject matter of claim 12; without adding all the limitations of the base claim.

Although Applicant has certain arguments against this statement, Applicant has amended Claim 7 to include that the reference table “takes account, as parameters, of an amount of energy . . .” to advance the prosecution of this application. This amendment is based on previously cancelled Claim 10. Accordingly, Applicant submits that amended independent Claim 7 includes the previously-indicated allowable subject matter including all the limitations of the base claim.



An earnest endeavor has been made to place this application in condition for formal allowance, and allowance is courteously solicited. If the Examiner has any questions regarding this Response, Applicant respectfully requests that the Examiner contact the undersigned.

Respectfully submitted,

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